Accessing International Equity Markets:
What Firms from Which Countries Go Abroad?

by

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Abstract

We study the determinants of accessing international equity markets for a large sample of firms from 53 countries. We find that firm characteristics—size, growth, valuation, performance, and foreign activity—are important determinants for firms from developed countries, but less so for firms from developing countries. We report evidence that, conditional on the country already being internationalized, firms from less developed countries use the cross listing to bond to higher legal and other standards. Finally, listing abroad is associated with an increase in sales growth, higher valuation and return on assets, and lower leverage, although these effects diminish following listing.

JEL classification codes: G15, G18, G20

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1. Introduction

Globalization has meant increased cross-border capital flows, tighter links among financial markets, and greater commercial presence of foreign financial firms around the world. An element of the globalization trend has been the migration of securities market activities abroad, particularly in the case of emerging markets. Many firms now cross-list in global markets, including using Depositary receipts (DRs).[1] Many stock exchanges, especially in emerging markets, have seen trading migrate abroad. With foreign listing, firms can obtain access to more liquid markets, attract more easily funds at lower costs and better terms, and tap into wider investor bases. In addition, firms that operate under weak minority shareholder protection frameworks might use the foreign listing as a signal to their shareholders that they are willing to protect minority shareholder rights. The share of trading abroad also seems to be on an increasing trend and advances in technology further accelerate these trends, as remote access to foreign markets has become increasingly easy. High liquidity increases the value of additional transactions, leading to more concentration of order flow and even greater liquidity at global exchanges. These developments may make it even more attractive for firms to list abroad.

In an earlier paper, Claessens, Klingebiel, and Schmukler (2002), we investigated the determinants of the growing migration of stock exchange activity to international financial centers at the aggregate level. We found that countries with higher income per capita, sounder macro policies, more efficient legal systems, better shareholder protection, and more open financial markets tend to have more migrating of capital raising, listing, and trading to international financial centers. Although we used data for

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individual firms in that paper, we only studied the process of internationalization at the aggregate level of a country. We did not investigate what types of firms were more likely to be internationalized. Firm characteristics matter, of course, in the decision to go abroad. Casual evidence suggests, for example, that internationalization has often involved larger corporations that already operate internationally. It might be that mainly high-growth firms go abroad. There has also been a flurry of new, innovative firms that have been able to secure financing abroad, suggesting that the sector in which the firm is active can be important as well. But beside firm characteristics, also country characteristics, and possibly interactions between firm and country characteristics can affect the probability of firms going abroad.

There are different strands of literature that have studied the relation between firm and country characteristics and the internationalization of equity markets. One strand studies the characteristics of firms listing abroad. This strand tries to explain why and what type of firms go abroad, with often a focus on developed markets. Pagano, Roell, and Zechner (2002), for example, study the characteristics of European firms listing abroad. They find that firms with high growth (potentials) and in high-tech industries are more likely to list in the U.S., whereas firms that cross-list within Europe do not grow more than a control group. In terms of country characteristics, Pulatkonak and Sofianos (1999) find that the time-zone distance from the U.S. and the level of trading largely explains the decision of foreign firms to list in the U.S. Sarkissan and Schill (2000) find that geographical proximity effect and other affinity factors, such as trade links and common language, explain cross-listing for a very large sample of firms in many markets. Diversification gains seem to matter little as cross-listing is more, not less,

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[1] See Karolyi (1998) and Pulatkonak and Sofianos (1999) for more details and a complete review of the

common across markets where returns are highly correlated. Reese and Weisbach (2000) find that the weaker the corporate governance framework in the home country, the more likely firms are to cross-list on NYSE or NASDAQ. They argue that listing abroad can be a tool for corporations to signal to their investors that they are more willing to protect minority rights, as corporate governance rules are stronger abroad.[2]

A second strand of the literature investigates the benefits of a foreign listing, providing insights into the motivation of firms to list abroad. Karolyi (1998), Baker, Nofsinger, and Weaver (1999), Lins, Strickland, and Zenner (2001), Schmukler and Vesperoni (2000 and 2001), Chaplinksy and Ramchand (2000), Miller and Puthenpurackal (2000) and Doidge, Karolyi and Stulz (2002) find that firms that participate in international markets tend to see their valuation increase, obtain better financing opportunities and extend their debt maturity. Global offers also expand demand and reduce the price pressure effects associated with share issuance, i.e., they lower costs and increase shareholder's wealth (Stulz 1999, Lombardo and Pagano 1999, Martin and Rey 2000, and Errunza and Miller 2000). With a foreign listing firms can also signal that they are willing to commit to high standards of corporate governance and/or disclosure as found by Cantale (1996), and Fuerst (1998). Trading abroad may also enhance liquidity. Kadlec and McConnell (1994), Noronha, Sarin, and Saudagaran (1996), Foerster and Karolyi (1998), and Smith and Sofianos (1997), find that greater competitive pressures from another exchange and the greater turnover associated with a

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options to list internationally.
[2] From a different perspective, the international finance literature also studies which firms have access to international capital markets. For example, Caballero and Krishnamurthy (2002) explain crises in emerging markets by building a model in which firms have limited borrowing capacity due to the lack of valid collateral. In their framework, export sector revenues are a form of international collateral. Tornell and Westermann (2002) explain the boom-bust cycles in emerging markets by modeling an economy with two sectors, one with large, tradable firms and one with small, non-tradable firms.

wider shareholder base can narrow the spreads on domestic markets and raise its trading activity. Finally, companies can use foreign listings to capitalize on their product market reputation in a foreign market in the case of companies that sell popular brands or to increase foreign sales (Saudagaran 1988 and Stoughton, Wong, and Zechner 2001) among others.

Another strand of the literature analyzes the geography of trading and competition among stock exchanges. Portes and Rey (2002) use a gravity model to explain bilateral gross cross-border equity flows between 14 countries and find that the geographical component (market size, distance, information transmission, information asymmetry between domestic and foreign investors, and the efficiency of the transactions) is the main determinant of the pattern of international transactions. Foucalt and Parlour (2001) show there can be competition among exchanges between fixed (listing) costs and variable (trading) costs where firms self-select between markets and different type of markets can prosper at the same time. Chemmanur and Fulghieri (2002) examine competition among exchanges in terms of listing standards. Coffee (2002) analyzes the evolution of securities markets around the world against the background of increasing globalization and advances in technology. He argues that two types of exchanges may co-exist in the future: high corporate governance standard stock exchanges with disperse ownership concentration; and lower corporate governance standard stock exchanges for firms with family ownership and high ownership concentration. Some of these papers also suggest that migration has consequences on local markets. Moel (2001), Karolyi (2002) and Levine and Schmukler (2003) draw attention to the effect the migration has on domestic stock market activity.

As evident from this brief review, there is a range of research examining the characteristics, determinants and benefits of firms migrating abroad. These studies do not always study the characteristics of firms going abroad, and even if they do, they often do include a small or not diverse set of countries. Few papers studied the combination of country and firm characteristics in affecting firms' probability to go abroad. As far as we know, there is no study that analyzes in a comprehensive way the determinants of migration of firms from a large cross-section of countries to major financial centers. Studying firms from a large cross-section of countries can provide more as there will be more variety in country (and firm) characteristics, allowing better identification of macroeconomic and institutional factors, also vis-à-vis microeconomic factors.

In this paper, we study which firms cross-list in international financial centers for a large number of countries around the world capturing both firms that list abroad and those that list domestically only. Firms are considered to cross list if they have either obtained a formal listing on an international stock exchange or have issued a depositary receipt. International firms are defined as those that cross-listed at one point in time in the sample. We collect detailed information on firms' key characteristics such as size, growth, valuation, financial structure, sectors, and foreign activity. We compare firms across countries, within countries, and over time to gain insight into not only what type of firms have access to international markets, but also what type of firms from which countries tend to go abroad. We concentrate on answering three questions. What are the characteristics of firms that cross-list? What determines the probability of cross-listing? And how are firm specific characteristics affected by the cross listing? We investigate these questions for 4,092 international firms in 53 countries between 1986 and 2000, and study these firms relative to 13,755 firms that list only locally.

To answer the first question, we compare the characteristics of domestic firms vis-à-vis international firms. These comparisons help us identify whether firms that cross-list have some common, distinguishable characteristics relative to firms that list only domestically. We also compare firms from developed countries vis-à-vis developing countries to see whether differences hold for international firms from developing countries as well as for firms from developed markets. To answer the second question, we estimate the probability of cross-listing for firms from different countries and macroeconomic environments and at different points in time. These estimations help identify what firm and/or country characteristics affect the probability of cross-listing. To answer the third question, we compare the evolution of firm characteristics before and after cross-listing from developed and emerging countries. These comparisons tell us whether firm characteristics change before, at or after cross-listing as firms may both prepare for cross-listing, changing some of their attributes, as well as be affected by cross-listing. This provides gain insight into the determinants of going abroad. We again separately study firms from developed and developing countries to see whether these differences hold for international firms from developing countries as well as for firms from developed markets.

The paper is organized as follows. Section 2 describes the data while section 3 describes the methodology we adopt. Section 4 presents the results of the econometric work to gather the main empirical regularities of firms migrating to international financial markets. Section 5 concludes.

2. Data

We analyze at the firm level and across a cross section of countries the determinants of access by individual firms to international financial markets. To do so we develop a comprehensive database of internationalization and collect data on the characteristics of internationalized firms as well as data on those firms that remain domestic companies as a control sample. We therefore assemble data on firms' participation in the international equity markets as well as in the local markets for 53 countries. The list of countries covered and the groupings by income level are provided in Table 1, while the data sources are detailed in the Appendix Table.

As international financial markets, we mainly study the two largest financial centers, New York and London, but we also use data from the Frankfurt Stock Exchange. There are no comprehensive data available on the degree to which securities are being listed and traded abroad. We therefore combine a number of sources for the raw data on international activity. There are four sources of data for U.S. international trading activity and two sources for international activity in Europe.

For the U.S., the first source is the Bank of New York, which covers DRs programs in the three major stock exchanges in the U.S.: NYSE, NASDAQ, and AMEX and contains information on the list of current DR programs and the effective date of each program. As of March 2001, there were a total of 2,206 listed programs. The DR Directory includes all currently active programs, dating back to January 1956, with most of them being initiated after 1980. The resulting database accounts for 1,951 active DR programs from 1,524 firms in 80 countries. The second database is NASDAQ, which covers data on foreign companies listed in that stock exchange, from 1999 to 2001. In addition, a third dataset is from NYSE and has data on foreign companies cross-listed on

NYSE. The fourth source of data in the U.S. is Euromoney, which covers all operations of capital raised in international markets by firms. This database provides a more comprehensive account of capital raised, because it includes DR programs, cross-border listings, and capital raised in the local markets. It reports 8,795 operations from 5,665 firms in 86 countries, covering the period January 1983 - April 2001.

To cover international activity in Europe, we use a dataset from the London Stock Exchange that contains information on international activity for 45 countries for the period from January 1997 to December 2000. The second dataset comprises international activity of all German stock exchanges and is provided by the Frankfurt Stock Exchange. It covers international firms from 75 countries for 1999 and 2000.

The data from Bank of New York, Euromoney, NYSE, NASDAQ, LSE, and FSE allow us to construct a list of the "international" companies. We define international firms as those that cross-list, directly or via DRs, or raise capital in international stock markets. Our definition is thus more general as listing on international exchanges alone, because it also captures capital raising without listing. At the same time, we do not, however, consider the degree to which foreign investors hold shares or trade in local markets as an indication of internationalization of the firm. It would not be possible to construct such a series on a cross-country basis because most countries do not distinguish between local and foreign investors in the domestic market.

In addition to determining whether or not a firm is international, we collect information from Worldscope on firm characteristics including information on balance sheet and income statements plus book-to-price data for all listed firms in the local markets.

Next, we obtain information on macro-level variables on the country level. These include the value traded abroad over total value traded, the law and order index, GDP per capita, and inflation. Value traded abroad over total value traded we obtain from Claessens et al. 2002. The nominator is derived from firm specific trading figures for firms trading on New York exchanges.[3] The denominator is always the total local value traded, expressed in dollars. It controls for the degree to which the country is already internationalized. For the quality of the institutional framework, we use the Law and Order index, as reported by the Country Risk Guide and as used by many, among others by La Porta, Lopez-de-Silanez, Shleifer, and Vishny (1998). We collect GDP per capita data from the World Bank and data on inflation from the IMF. The first variable controls for the general level of development, while the second proxies for the degree of macro-economic instability, affecting, among others, the supply of domestic savings.

3. Methodologies

To investigate the firm and country determinants of going abroad, we explore different techniques, building on those used by Pagano, Panetta, and Zingales (1998) and Pagano, Roell, and Zechner (2002) to analyze the going abroad decision of firms from developed countries. Each methodology responds in part to a different question as well provides a robustness test, either in an econometric sense or in terms of hypothesized patterns. In particular, the methodologies study the characteristics of firms that cross list relative to those firms that remain listed domestically, before they internationalized; the firm and country factors influencing their decisions to cross list; and the characteristics of

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[3] When using this variable in the regressions explaining the determinants of going abroad for individual firm, we exclude from the numerator the trading in the specific stock itself in the year of listing and following year(s).

internationalized firms after cross listing, distinguishing different home countries. For most of these techniques, we compare these two types of firms, international and domestic, in different countries and at different points in time.

We use a set of different firm characteristics to make our comparisons. The ones we employ, but not all report, can be thought to fall under five headings: size, growth, performance and valuation, financial structure, and international activity. As proxy for firm size we use total assets (we also used number of employees and total sales revenue, which led to similar results). As growth characteristics we employ growth in total sales revenue. For valuation and performance we use respectively price-to-book value and return on assets. For financial structure we employ leverage, measured as liabilities to total assets. As a proxy of international activity we employ the share of foreign sales over total sales. Finally, we also use the sector in which the firm is mainly active.[4]

3.1   Characteristics of international and domestic firms

To document the characteristics of firms cross-listing we compare for our firm variables the difference in medians between international and domestic firms. We do this in two different ways. First, we compare domestic versus international firms for the whole sample and for developed and developing countries separately. We then compare international and domestic firms from the different set of countries with one another.

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[4] We also employed a number of other variables, such as the growth in the number of employees, asset per employee, research per employee, research over revenue, property, plant, and equipment growth, price to earnings ratio, short-term debt to total debt, retained earnings, and capital expenses over total assets. We do not report these variables, but analysis using these variables shows that they can be thought as close proxies for the ones we do report.

3.2 Probability of cross-listing

To investigate which firms' and country characteristics predict listing abroad we estimate both a probit model and Cox proportional hazard model. The probit model predicts the going abroad decision over a future time period using information as of a certain date. It does not use new information becoming available in any time period before actually going abroad after this date and is thus a conservative way of identifying the firm (and country) characteristics as it is not affected by firms preparing for cross-listing, changing some of their attributes nor by changes in country characteristics.

The Cox model also estimates the determinants of the probability of cross-listing. The model relates the hazard rate $h(t)$ (the probability of listing at time t conditional on not having listed yet) to a set of observable variables X:

$$h(t) = h_0(t) \exp(X'\beta),$$

where $h_0(t)$ is the baseline hazard rate at time t for the covariate vector set at 0 and β is a vector of coefficients. This semi-parametric estimator assumes that the hazard ratio $h(t) / h_0(t)$ is constant over time and requires no assumptions about the baseline hazard.

As the set of firm determinants for the probit and Cox models, we use the previous year's values of the logarithm of total assets, sales growth, the market-to-book ratio of the firm, the return on assets, the leverage ratio, the proportion of sales abroad, and, in case of the Cox regressions, also a privatization dummy (equal to 1 when the government makes a public offering of shares in the firm). We also include sector dummies for each regression. In addition, we include the following country factors, the degree of internationalization, Law and order, GDP per capita, and inflation. We also include calendar year dummies for each regression. We conducted, but do not always report separate estimates for the pooled data, developing countries and developed countries.

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3.3 Characteristics of firms before and after cross-listing

To analyze how firm characteristics change with listing, and thus help identify the factors motivating firms to cross-list, we compare differences in medians before and after listing. We do this again for the whole sample and for developing countries and developed countries separately. We also compare how firm characteristics vary from before listing abroad, at listing and after listing. We do this using least absolute value (LAV) regressions. With this procedure, the variable of interest (e.g. total assets) is regressed on a relative-listing-year dummy, controlling for calendar year, and country of incorporation will also compute the differences in means. The relative-listing-year dummy for year +n (-n) will take the value 1 for observations taken n years after (before) the year in which the firm is first cross-listed abroad. We use a window or 3 years before and after listing, i.e., there are six cross-listing dummy variables, ranging from year –3 (three years before) to year 3 (three years after).

Econometrically, we estimate a model where y_{it} (our variable of interest, like firm growth, share price, profitability) depends on fixed effects and a set of cross-listing dummies. The regression estimated is:

$$y_{it} = \alpha_0 + \alpha_1 f_i + \lambda_1 d_{it}^0 + \lambda_2 d_{it}^{before} + \lambda_3 d_{it}^{after} + \varepsilon_{it},$$

where f_i denotes a firm fixed effect, d_{it}^0 is a dummy to capture the impact effect of the first cross-listing of firm i, and d_{it}^{after} is dummy corresponding to the three years after listing. We run these Cox tests for the whole sample as well as dividing the sample in developing and developed countries.

4.   Results

4.1   Firms cross-listing

We start with providing some basic summary statistics. Table 1 provides the total number of firms covered by country and the number of international and domestic firms among the whole sample of domestic firms covered. The sample of domestically listed firms does not cover all firms within the country, mainly as we needed to collect a variety of firm specific-indicators.

We also split the table by developing countries and developed countries' markets. As can be seen from the total by each category, the number of international firms is much less for developing countries than for developed countries, 833 versus 4,092. This reflects largely the smaller total number of listed firms in developing countries, at least as covered by us, less than half of that in developed countries, 4,209 versus 9,546. It may also suggest that there has been relatively less migration among firms from developing countries. As documented by Claessens et al., 2002, however, many emerging markets had as of end 2000 more than 50% of local capitalization listed abroad. The comparison between developed and developing countries thus reverses when calculating the share of market capitalization internationalized instead of the relative number of firms. This already suggests that relatively speaking, larger firms in developing countries are more likely to list abroad.

Figure 1 plots the number of firms from developed and developing countries each year. Not surprisingly, possibly reflecting the level of home market development, the number of companies going abroad is substantially higher for developed countries compared to developing countries during the sample period. It shows that for firms in developing countries, the time patterns for cross listing is erratic. For developing country

firms, cross listing increased significantly during the early 1990s, peaked in 1994 at around 140 annually, and then tapered off substantially to below 50 new listings annually, basically reflecting the pattern of privatization in those countries. Contrary to this, cross listing for firms in developed countries took off in the late 1990s and almost tripled between 1997 and 2000 from 220 new listings annually to over 500 listings annually.

A total of 23 percent of firms in our sample had migrated as of 2000 (Table 2), a relatively higher proportion from developed than from developing countries, 25.5 versus 16.5 percent. However, these ratios have to be seen as indicative as we do not have a complete sample of the domestic firms but rather use domestic firms as a control sample in each country. Most international firms are from the manufacturing, services and finance sectors. Firms active in transportation and public utilities, public administration and services saw a higher percentage of their peers in the sector migrate. A high percentage of international firms in developed countries come from the manufacturing and services sector while in developing countries many firms come from the manufacturing, finance and utilities sectors.

Before discussing the results, it is worth stressing that there exist high correlations among some country variables. Table 3 shows that the Law and Order index and GDP per capita are highly correlated, a correlation coefficient of 0.73 for the whole period and 0.71 for the year 1993. This already suggests that it might be difficult to separate the quality of the legal system from the country's overall level of development. As noted, we further distinguish developed countries from developing countries as many macroeconomic and institutional characteristics of countries and equity markets fall along these lines. Analysis (not reported) shows that there are statistically significant

differences in terms of Law and Order index, GDP per capita, inflation, market capitalization as a share of GDP and degree of internationalization for these two groups.

4.2   Characteristics of firms internationalizing

The tests of medians (Table 4a) indicate that international firms are larger, grow faster, are higher valued, have higher returns on assets, and carry on more international business than domestic firms do. Especially the size difference between international and domestic firms is large, almost a factor four ($220 million versus $840 million). There is a small difference in terms of median leverage, measured as liabilities to total assets, between international and domestic firms. For the two groups of countries, developing and developed, the patterns in differences between international and domestic firms are similar, although the differences among international and domestic firms from developing countries are less statistically significant than those for developed countries are.

While international firms from developed countries differ in similar ways from domestic firms as international firms from developing countries differ from their domestic firms, there are differences between the type of firms listed in each group of countries. Table 4b shows the differences in the same median characteristics between international firms from developed countries and from developing countries and between domestic firms from both sets of countries.   International firms from developed countries tend to be larger and be higher valued than those from developing countries are; they also tend to be more leveraged and have greater share of foreign sales.   But firms from developing countries tend to have higher sales growth and higher return on assets than firms from developed countries do.   These differences among international firms also

carry through for the domestic firms as domestic firms in developed countries are larger and higher valued than firms in developing countries are, while domestic firms in developing countries tend to grow faster and have higher returns. Also leverage and foreign sales are higher for domestic firms from developed countries than from developing countries.

The two panels together suggest that international firms from developed countries do not differ from international firms from developing countries in a manner that varies from how domestic firms in developed countries differ from domestic firms in developing countries. In other words, the internationalized firms appear to differ in similar ways from domestic firms in both sets of countries.

4.3. Probability of cross-listing: Probit regressions

We next investigate the probability of internationalization using probit regressions. The estimations use the firm and country information as of 1993 and thus tries to predict whether firms are likely to go abroad over the remaining 7 years. Consequently, it is quite a stringent test as it does not use any information on how firm or country characteristics may change over time. It also does not use any information on the state of global financial markets and investor sentiment towards firms internationalizing. The specifications employs, besides firm characteristics, the share of value traded internationally over value traded domestically, and two more country characteristics. We do not use more than three country macro variables at the same time because they are highly correlated (Table 3), especially for 1993.

The results for the firm characteristics (Table 5) are relatively uniform across the regression specifications and consistent with the results from the median comparisons.

Larger firms with higher price-to-book value, higher return on assets, and lower leverage are more likely to go abroad. This suggests that better performing firms have both greater incentives and greater chances to go abroad. More foreign sales also increase the chances of a firm seeking a foreign listing, suggesting that there is some collateral value to having international activities. The results for sales growth are less clear as the variable is not statistically significant or has a negative sign. Possibly, the other firm characteristics already control for growth opportunities. The percentage of firms correctly predicted to go abroad is quite close to the actual share. Of course, the success rate is not perfectly predicted which is not a surprise as the decision for firms to go abroad is also on idiosyncratic factors, including shareholders and management's background, global business cycles and opportunistic funding windows.

In terms of country characteristics, firms from countries that are more internationalized (i.e. with more trading abroad as a share of domestic trading) have a higher probability to cross-list. This suggests that these markets may be better known among investors in international financial centers, facilitating the process of individual firms to go abroad. These countries may have crossed a hurdle, i.e., for international investors firms from these countries are acceptable, as their country of origin has passed a threshold in terms of overall and institutional development. The positive coefficient may also reflect the desire of firms to seek foreign listing to enhance their liquidity.

In terms of the other macro-economic variables, the inflation rate has consistently a statistically significant positive sign for all specifications. This suggests that firms in countries with worse macro-economic fundamentals are more likely to seek a foreign listing, possibly as the supply of savings is lower in these countries. Firms may thus seek a foreign listing as a way to tap into a larger pool of savings, i.e. they may simply seek

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financing. The law and order and the GDP per capita variables provide varying results.

While not consistently significant, the law and order index has a positive sign in all

specifications, suggesting that companies from countries with a better legal system tend

to migrate. This suggests a hurdle effect, consistent with the results of the results for the

degree of internationalization variable and the analysis of the degree of aggregate market

internationalization of Claessens et al. 2002. The GDP per capita variable, however, is

negative and significantly so, suggesting that firms cross-list to bond themselves to

higher standards.   In other words, firms from countries with a generally lower

institutional development (using the per capita income as proxy) have greater incentives

to seek a foreign listing.   However, as noted earlier, the macro variables are highly

collinear (see Table 3), and it is thus difficult to separate the level of general development

from the quality of countries' legal framework. Finally, excluding firm characteristics

dramatically reduces the pseudo R^2, from 27 percent to 4.2 percent, indicating the

importance of firm characteristics in explaining the cross listing events.

4.4.   Probability of cross-listing: Cox regression results

We next report the results of the second technique analyzing the factors affecting

the probability of going abroad. The Cox regressions take a somewhat less conservative

approach than the probit regression as they use all information on the firm financial

characteristics until the year in which the firm actually list abroad.   The results are

reported in Table 6, where a coefficient greater than one indicates that increases in the

variable enhance the probability of the firm going abroad and less than one decrease the

probability. The results confirm the results of the probit regressions at the firm level:

asset size, firm valuation, performance and foreign sales share are positively related to

the probability of listing abroad, while higher leverage deters listing abroad. Sales growth is now also positively related to the probability of going abroad and privatization is very strongly related to the foreign listing decision (in the probit regressions, privatization was not used as it predicted foreign listing perfectly).

Except for the law and order variable the coefficients for the macro variables have also the same interpretation as in the probit regressions. In countries that are more internationalized, i.e., have seen more trading abroad as a share of domestic trading, firms have a higher probability to go abroad. And in countries that are less developed in terms of lower GDP per capita, firms' chances of going abroad are higher as the coefficient is less than one. This result again suggest a bonding effect since the probability of a firm going abroad, conditional on the country being internationalized, is negatively related to country fundamentals. The law and order variable is only significant in one specification and, in contrast to the probit regression, has a value of less than one, supporting the bonding story. While inflation is not consistently significant in all specifications, it is always larger than one, indicating that firms from countries with higher inflation have a higher tendency to cross list, possibly to lower their costs of capital and/or access a larger pool of savings.

The Cox regression results differentiated by country groups confirm the general results (Table 7). As in the undifferentiated regression results, most firm characteristics (sales growth and leverage are exceptions) are statistically significant and equally so for developing countries as for developed countries. Firm characteristics still appear more important in the probability of going abroad for developed countries, however, as the coefficients are generally larger, except for the return on assets variable. Furthermore, leverage is statistically significant negative for developed countries and not significant

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for the developing countries' sample. This contrasts with Pagano et al. 2002 who find that leverage has a positive (although not always significant) effect on the probability of going abroad for firms from developed countries. Another contrast with Pagano et al. 2002 is that they find a negative sign for the return on assets variable. All other firm variables are consistent with those they found.

4.4   Before and after cross-listing

One other way to check for the reasons for going abroad is to study the effects of the actual listing on firm characteristics. This can provide a confirmation of the desires of firms to go abroad. Table 8 provides the comparisons between the medians of the standard firm variables for the whole sample before and after internationalization. It shows that the median firm increases in asset size, slows down in terms of sales growth, and has about the same valuation and performance before and after listing. Firms do seem to de-leverage and increase their share of foreign sales. The data comparison may be the result of the tendency of firms to boost their financial performance prior to listing. The slowdown in sales growth, for example, may reflect the more aggressive accounting prior to listing.

These differences vary somewhat for the groups of developing countries and developed countries. The median firm in developing countries does not increase in asset size, and slows down even more in sales growth. In contrast to developed countries, the median firm in developing countries actually has significantly lower valuation and worse performance. Like in developed countries the median firm in developing countries does also de-leverage and increases somewhat its share of foreign sales, although not significantly. Firms in developed countries seem to drive the increase in asset size for the

whole sample, they also slow down in sales growth, but increase in valuation and somewhat improve their performance. They do also de-leverage and increase foreign sales significantly. This suggests that firms in developing countries have no or less of a financial gain from foreign listing.

We can further analyze the effects of listing using LAV-regressions. These regressions control for fixed firm effects and allow us to distinguish various temporary impacts: for the three years before listing, at the year of listing, and for the three years following listing. The LAV-regression results for all countries (Table 9, top panel) show that positive effects are observed before listing, at listing, and three years after for asset size, sales growth, price-to-book, and return on assets. For leverage, positive effects are observed before listing, while negative effects are found at and after listing. All of these effects are statistically significant. The LAV-regression results on the price-to-book value and return on asset variables differ from the simple before and after listing comparison in Table 8, where there was no significant increase in return on assets and even a decrease in price-to-book value between before and after listing. It suggests that firm effects may confound comparisons. The decline in leverage after listing should not surprise, since listing is often associated with new capital raising (and actually our definition of listing is partly based on listing). The increase in leverage before listing may reflect the larger financing needs of the firm—likely given the investments the fast growing firm is making, triggering in part its desires to list abroad. The LAV-regression results do suggest it is important to control for fixed firm effects and for temporary changes in variables immediately before listing which can confound simple before and after comparisons.

There are some differences when distinguishing the two groups of countries, mostly in terms of the size and significance of the effects (Table 9, lower two panels). For the developing countries, the return on assets does not show any significant effect before listing, but also shows an increase at and after listing. The de-leveraging effect at listing is less significant for developing countries than for developed countries and after listing not significant at all. While we do not do a formal test, it seems the size increase effects are larger for developing countries, whereas the valuation effects are larger for developed countries. Otherwise the effects before, at and after listing are similar for both groups of countries and suggest that firms accessing international markets get better valuation and financing terms, and increase their size, sales growth and return on assets, although the latter two less than before or at listing.

5. Conclusions

Migration of firms to international financial centers is a function of both "microeconomic" or firm characteristics and macroeconomic factors. So far, the firm dimension of migration, i.e., what type of firms migrate to financial centers, has mostly received attention for developed countries, while the macroeconomic dimension has only been studied at the level of the overall market. For a large sample of firms from a wide cross-section of countries, we find that both dimensions can be important, although firm characteristics appear to have the most explanatory power for the going abroad event. With respect to country characteristics, we find the degree to which a country is already internationalized to be the most important country dimension that can explain listing abroad. In addition, it appears that firms from less developed countries with weaker legal systems use listing abroad to bind themselves to higher standards.

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From a policy perspective, this paper may be relevant in three areas. First, understanding better the combination of country and firm characteristics that allow firms to issue capital internationally can help design policies that will increase the likelihood of firms accessing global capital markets and reaping the associated gains (of lower costs and better terms). For example, it appears that firms from weaker countries can use international markets to bind themselves to higher standards only when the country of origin has passed some hurdle in terms of legal and overall development. Second, the paper sheds some light on the prospects and viability of stock exchanges in countries of different characteristics. It seems that countries that are sufficiently far along in developing the legal and other institutional foundations for their financial markets risk the prospects of triggering migration from their stock exchanges as firms become able to access international markets. This has implications for local market capitalization, liquidity and general development, with the severity depending on the type of country and its corporate sector structure. It can suggest that (further) investments in the development of a local trading system or stock exchange are not necessarily warranted as local markets are not viable and efficient on their own. Third, the paper provides insights on which firms cannot be expected to migrate, even when certain policies improve, and which are therefore left to issue capital, trade, and list domestically. Tailoring the forms of local capital market development to these firms specifically would be important. The outcome may well differ from that of a fully-fledged stock exchange as may exist in an advanced country. More generally, the preferred form of financial market development will hinge on the nature and determinants of the migration abroad.

The results from this paper also raise questions for further research. There may be important interactions between firm and country characteristics that drive our results. for

example, asset size may interacts with country characteristics when large firms in less developed markets are more willing to incur the costs, financial and otherwise, to be able to list abroad. Similarly, relatively higher valued and better performing firms in less developed and more unstable markets may be more likely to see a listing abroad. So far, we have not been able to identify these patterns in a consistent manner, but more analysis could show that there are important interactions in the migration decision. We also did not distinguish between firms that only list abroad and those that raise capital abroad as well. Theory suggests that a set of very similar, but not all identical factors affect these two decisions. Differentiating the determinants of listing only from capital raising can help shed some light on these theories. Finally, we have not used any firm specific governance variables, ownership structures or other firm variables that may be important in the listing abroad decision. Clearly, firms can try to bind themselves to higher standards through other means, such as having (more) independent directors, hiring better accountants, etc. Whether these voluntary mechanisms alone are effective in less developed countries and whether internationalization serves as a complement or substitute corporate governance tool is an important issue.

References

Baker, H. K., J. R. Nofsinger, and D. G. Weaver, 1999. International Cross-Listing and Visibility, NYSE Working Paper 99-01, January.

Caballero, R. and A. Krishnamurty, 2002. International and Domestic Collateral Constraints in a Model of Emerging Markets Crises, *Journal of Monetary Economics* Vol. 48(3), pp. 513-548.

Cantale, S., 1996. The Choice of a Foreign Market as a Signal, INSEAD Working Paper.

Chaplinksy, S. and L. Ramchand, 2000. The Impact of Global Equity Offerings, *Journal of Finance,* 55:6, 2767-89.

Chemmanur, T. and P. Fulghieri, 2002. Choosing an Exchange to List Equity: A Theory of Dual Listing, Listing Requirements, and Competition Among Exchanges, unpublished manuscript, INSEAD.

Claessens, Stijn, D. Klingebiel and S. Schmukler, 2002. The Future of Stock Exchanges in Emerging Markets, CEPR Discussion Paper No. 3301.

Doidge, Craig, Andrew Karolyi and René Stulz, 2002. Why are Foreign Firms Listed in the U.S. Worth More?, forthcoming, *Journal of Financial Economics*.

Coffee, J., 2002. Competition Among Securities Markets: A Path Dependent Perspective, Columbia Law School Working Paper No. 192, March.

Errunza, V. and D. Miller, 2000. Market Segmentation and the Cost of Capital in International Equity Markets, *Journal of Financial and Quantitative Analysis*, Vol. 35(4), December, pp. 577-600.

Foucalt, Thierry and Christine Parlour, 2001. Competition for listing, mimeo, HEC and Carnegie-Mellon University, September.

Foerster S. and G. A. Karolyi, 1998. The Long-run Performance of Global Equity Offerings, *Journal of International Financial Markets, Institutions and Money*, Vol. 8, pp. 393-412.

Fuerst, O., 1998. A Theoretical Analysis of the Investor Protection Regulations Argument for Global Listing of Stocks, unpublished manuscript, Yale School of Management.

Kadlec, G. and J. McConnell, 1994. The Effect of Market Segmentation and Illiquidity on Asset Prices: Evidence from Exchange Listings, *Journal of Finance*, Vol. 49, pp. 611-636.

Karolyi, A., 1998. Why Do Firms Lists Shares Abroad? A Survey of the Evidence and Its Managerial Implications, *Financial Markets, Institutions and Instruments*, Volume 7, Number 1, Blackwell Publishers, Boston.

Karolyi, G. A., 2002. The Role of ADRs in the Development and Integration of Emerging Equity Markets, unpublished manuscript, Ohio State University.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny, 1998. Law and Finance, *Journal of Political Economy* 106(6), 1113-55.

Levine, Ross, and Sergio Schmukler, 2003, Migration, Spillovers, and Trade Diversion: The Impact of Internationalization on Stock Market Liquidity, University of Minnesota and World Bank

Lins, K., D. Strickland, and M. Zenner, 2001. Do Non-U.S. Firms Issue Equity on U.S. Stock Exchanges to Relax Capital Constraints, mimeo, David Eccles School of Business, University of Utah.

Lombardo, D. and M. Pagano, 1999. Law and Equity Markets: A Simple Model, Universita di Salermo, CSEF Working Paper No. 25.

Martin, P. and H. Rey, 2000. Financial Integration and Asset Returns, *European Economic Review*, Vol. 44(7), pp. 1327-1350.

Miller, D. and J. Puthenpurackal, 2000. <u>The Costs, Wealth Effects and Determinants of International Capital Raising: Evidence from Public Yankee Bonds</u>, mimeo, Indiana University and Texas A&M University.

Moel, A., 2001. The Role of American Depositary Receipts in the Development of Emerging Markets, Economia Vol. 2 (1), pp. 209-273. (Fall 2001).

Noronha, G., A. Sarin, and S. Saudagaran, 1996. Testing for Microstructure Effects of International Dual Listings Using Intraday Data, *Journal of Banking and Finance*, Vol. 20, pp. 965-983.

Pagano, M., A. Roell, and J. Zechner, 2002. The Geography of Equity Listing: Why Do Companies List Abroad? *Journal of Finance*, Vol. 57(6), December.

Pagano, M., F. Panetta, and L. Zingales, 1998. Why Do Firms Go Public: An Empirical Analysis, *Journal of Finance*, 53:1, 27-64.

Portes, R. and H. Rey, 2002. The Determinants of Cross-Border Equity Flows, unpublished manuscript, Princeton University.

Pulatkonak, M. and G. Sofianos, 1999. The Distribution of Global Trading in NYSE-Listed Non-U.S. Stock, NYSE Working Paper 99-03, March.

Reese, W. A. Jr. and M. S. Weisbach, 2000. Protection of Minority Shareholder Interests, Cross-listing in the United States, and Subsequent Equity Offerings, mimeo, Tulane University/University of Illinois, January.

Sarkissan, S. and M. J. Schill, 2000. The Overseas Listing Decision: New Evidence of Proximity Preference, mimeo, McGill University/University of California, April.

Saudaragan, S., 1988. An Empirical Study of Selected Factors Influencing the Decision to List on Foreign Stock Exchanges, *Journal of International Business Studies*, pp. 101-127.

Schmukler, S. and E. Vesperoni, 2000. Globalization and Firms' Financing Choices: Evidence from Emerging Economies, World Bank Policy Research Working Paper 2323.

Schmukler, S. and E. Vesperoni, 2001. Firms' Financing Choices in Bank-Based and Market-Based Economies, in *Financial Structure and Economic Development*, Demirguc-Kunt and Levine (Eds.), *MIT Press*.

Smith, K. and G. Sofianos, 1997. The Impact of a NYSE Listing on the Global Trading of Non-US Stocks, NYSE working paper 97-02.

Stoughton, N., K. Wong, and J. Zechner, 2001. IPO's and Product Quality, *Journal of Business*, Vol. 74, pp. 375-408.

Stulz, R., 1999. Globalization of Equity Markets and the Cost of Capital, *Journal of Applied Corporate Finance*, Fall, pp. 8-25.

Tornell, A. and F. Westermann, 2002. Boom-Bust Cycles in Middle Income Countries: Facts and Explanation, NBER Working Paper No. 9219.

Table 1
Number of International and Domestic Firms by Country

This table reports the number of international and domestic companies by country with data covered by Worldscope at the end of 2000. The countries are divided by income level, following the classification of the World Development Indicators, World Bank. Developed countries are the ones with income per capita of US$9,266 or more. United States and United Kingdom are not included in the sample due to their classification as international financial centers. The data to classify firms as international ones come from Bank of New York, Euromoney, London Stock Exchange, and Frankfurt Stock Exchange. [1] Hong Kong is a Special Administrative Region of China.

	Developing Countries			
	Country	Number of Firms	Number of International Firms	Number of Domestic Firms
1	Argentina	97	22	75
2	Brazil	444	45	399
3	Chile	200	25	175
4	China	188	124	64
5	Colombia	41	8	33
6	Czech Republic	74	27	47
7	Egypt	19	6	13
8	Hungary	44	28	16
9	India	386	68	318
10	Indonesia	237	53	184
11	Jordan	6	1	5
12	Malaysia	558	22	536
13	Mexico	176	53	123
14	Morocco	10	2	8
15	Pakistan	110	5	105
16	Peru	90	8	82
17	Philippines	192	46	146
18	Poland	96	25	71
19	Russia	41	20	21
20	Slovak Republic	22	6	16
21	South Africa	692	84	608
22	South Korea	789	32	757
23	Sri Lanka	18	2	16
24	Thailand	296	68	228
25	Turkey	159	43	116
26	Venezuela	46	7	39
27	Zimbabwe	11	3	8
	Total	5,042	833	4,209

	Developed Countries			
	Country	Number of Firms	Number of International Firms	Number of Domestic Firms
1	Australia	1,121	187	934
2	Austria	145	66	79
3	Belgium	202	63	139
4	Bermuda	3	2	1
5	Canada	805	286	519
6	Denmark	268	44	224
7	Finland	187	72	115
8	France	1,180	298	882
9	Germany	1,170	337	833
10	Greece	335	49	286
11	Hong Kong SAR[1]	697	313	384
12	Ireland	103	22	81
13	Israel	113	62	51
14	Italy	344	177	167
15	Japan	3,529	501	3,028
16	Liechtenstein	4	1	3
17	Luxembourg	44	16	28
18	Netherlands	303	165	138
19	New Zealand	84	17	67
20	Norway	254	46	208
21	Portugal	115	28	87
22	Singapore	390	101	289
23	Spain	245	94	151
24	Sweden	414	143	271
25	Switzerland	309	125	184
26	Taiwan, Province of China	441	44	397
	Total	12,805	3,259	9,546
	WHOLE SAMPLE TOTAL	17,847	4,092	13,755

Figure 1
Number of New International Firms by Year

This figure plots the number of firms from developed and developing countries that become international in each year. The number of firms from developed countries is plotted on the left axis. The number of firms from developing countries is plotted on the right axis. The data come from Bank of New York and Euromoney.
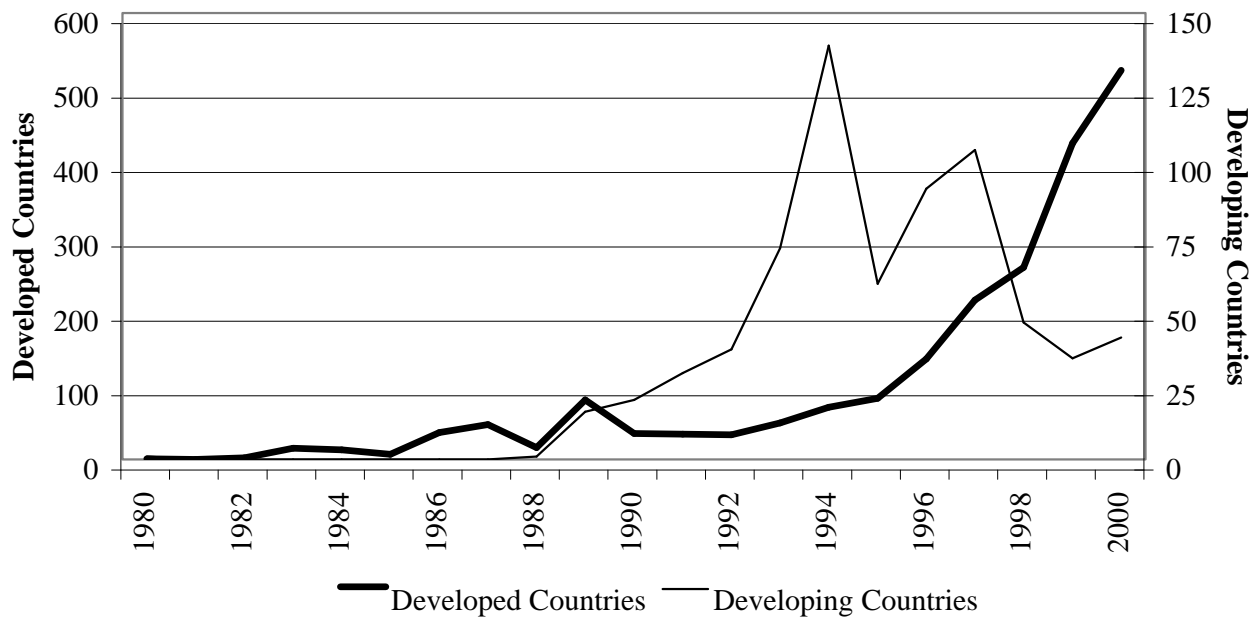
Table 2
Industry Classification

This table shows the distribution of the firms in the sample among the different sectors. It also shows the number of international firms as a percent of the total number of firms in that sector and the number of international firms from a specific sector as a percent of the total number of international firms. The table shows this classification for all firms in the sample, as well as for the division between developed and developing countries.

Industry Classification	All Countries			Developed Countries			Developing Countries		
	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms	Number of Firms	Percent of International Firms in the Sector	Percent of Firms from the Sector among International Firms
Agriculture, Forestry, and Fishing	158	11.39%	0.44%	67	10.45%	0.21%	91	12.09%	1.32%
Mining	796	27.51%	5.35%	595	26.05%	4.76%	201	31.84%	7.68%
Construction	735	12.93%	2.32%	545	12.48%	2.09%	190	14.21%	3.24%
Manufacturing	7,253	21.59%	38.27%	4,915	25.19%	37.99%	2,338	14.03%	39.38%
Transportation and Public Utilities	1,356	32.96%	10.92%	942	33.76%	9.76%	414	31.16%	15.49%
Wholesale Trade	1,228	16.12%	4.84%	1,026	17.25%	5.43%	202	10.40%	2.52%
Retail Trade	902	17.18%	3.79%	720	17.22%	3.80%	182	17.03%	3.72%
Finance, Insurance, and Real Estate	3,156	19.65%	15.15%	2,162	21.28%	14.11%	994	16.10%	19.21%
Services	2,150	34.42%	18.08%	1,811	39.09%	21.72%	339	9.44%	3.84%
Public Administration	113	30.09%	0.83%	22	18.18%	0.12%	91	32.97%	3.60%
Total	17,847	22.93%	100%	12,805	25.45%	100%	5,042	16.52%	100%

Table 3
Correlations among Institutional and Macroeconomic Variables

The table reports the pairwise correlations among the variables. In the top table, the whole sample period is used, while in the bottom table just the year 1993 is used. The numbers in parentheses are the number of observations used to calculate the correlations.

Whole Sample

	Law and Order	GDP per Capita	Inflation	Value Traded Abroad / Total Value Traded
Law and Order	1.00			
	(743)			
Log of GDP per Capita	0.73	1.00		
	(740)	(781)		
Log of Inflation	-0.52	-0.49	1.00	
	(720)	(748)	(760)	
Value Traded Abroad / Total	0.06	0.19	-0.08	1.00
Value Traded	(579)	(578)	(565)	(580)

Year 1993

	Law and Order	GDP per Capita	Inflation	Value Traded Abroad / Total Value Traded
Law and Order	1.00			
	(51)			
Log of GDP per Capita	0.71	1.00		
	(51)	(51)		
Log of Inflation	-0.54	-0.52	1.00	
	(49)	(49)	(49)	
Value Traded Abroad / Total	0.06	0.22	-0.05	1.00
Value Traded	(47)	(47)	(46)	(47)

Table 4.a
Differences between International and Domestic Companies

The tables report the medians and the Mann-Whitney U-test of equality of medians between characteristics of domestic firms and international firms, covering the whole sample. The top table reports the statistics for all countries in our sample, while the bottom two tables report the statistics for developed and developing countries, respectively.

All Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Domestic Firms	International Firms	Domestic Firms	International Firms	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.22	0.84	74,722	23,004	-81.51	0.00
Growth						
Sales Growth	4.90	8.87	61,889	20,037	-24.05	0.00
Performance and Valuation						
Price-to-Book Value	1.39	1.79	70,367	22,530	-42.99	0.00
Return on Assets	3.55	4.71	67,214	21,575	-26.35	0.00
Financial Structure						
Liabilities to Total Assets	60.84	60.25	79,944	25,854	2.39	0.02
Others						
Foreign Sales / Total Sales	32.25	42.04	15,165	9,497	-20.66	0.00

Developed Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Domestic Firms	International Firms	Domestic Firms	International Firms	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.25	0.92	57,009	18,089	-65.04	0.00
Growth						
Sales Growth	4.46	8.73	48,647	16,158	-24.63	0.00
Performance and Valuation						
Price-to-Book Value	1.44	1.86	54,081	17,826	-42.51	0.00
Return on Assets	3.07	4.33	52,449	17,362	-29.91	0.00
Financial Structure						
Liabilities to Total Assets	62.24	61.38	60,610	20,537	3.74	0.00
Others						
Foreign Sales / Total Sales	33.09	42.70	14,326	9,073	-19.89	0.00

Developing Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Domestic Firms	International Firms	Domestic Firms	International Firms	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.15	0.66	17,713	4,915	-51.66	0.00
Growth						
Sales Growth	6.83	9.61	13,242	3,879	-5.46	0.00
Performance and Valuation						
Price-to-Book Value	1.19	1.46	16,286	4,704	-11.45	0.00
Return on Assets	6.21	6.66	14,757	4,213	-4.16	0.00
Financial Structure						
Liabilities to Total Assets	56.24	55.41	19,334	5,317	0.57	0.57
Others						
Foreign Sales / Total Sales	18.23	26.17	837	424	-5.21	0.00

Table 4.b
Differences between Firms from Developed and Developing Countries

The table reports the medians and the Mann-Whitney U-test of equality of medians between characteristics of firms from developed and developing countries. In the top table, the tests compare international firms, while in the bottom table, the tests compare domestic firms. The analysis covers the whole sample.

International Companies

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Developed Countries	Developing Countries	Developed Countries	Developing Countries	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.92	0.66	18,091	4,915	4.54	0.00
Growth						
Sales Growth	8.73	9.61	16,160	3,879	0.04	0.97
Performance and Valuation						
Price-to-Book Value	1.86	1.46	17,829	4,704	21.56	0.00
Return on Assets	4.33	6.66	17,365	4,213	-19.22	0.00
Financial Structure						
Liabilities to Total Assets	61.38	55.41	20,540	5,317	13.05	0.00
Others						
Foreign Sales / Total Sales	42.70	26.17	9,073	424	8.84	0.00

Domestic Companies

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Developed Countries	Developing Countries	Developed Countries	Developing Countries	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.25	0.15	57,007	17,715	33.82	0.00
Growth						
Sales Growth	4.46	6.83	48,645	13,244	-9.50	0.00
Performance and Valuation						
Price-to-Book Value	1.44	1.19	54,078	16,289	25.68	0.00
Return on Assets	3.07	6.21	52,446	14,760	-53.37	0.00
Financial Structure						
Liabilities to Total Assets	62.24	56.24	60,607	19,337	26.83	0.00
Others						
Foreign Sales / Total Sales	33.09	18.23	14,326	837	12.98	0.00

Table 5
Probit Regressions

The table reports probit estimates and robust z-statistics of the probability of becoming an international firm. The figures show the marginal probabilities, i.e., the change in the probability for an infinitesimal change in each independent, continuous variable, and the discrete change in the probability for dummy variables. The dependent variable is a dummy variable that equals zero if the firm is domestic in the entire sample, and equals one if the company is a domestic company in 1993 and becomes international at any point in the sample. The values for the independent variables are 1993 values. *, **, *** mean significant at 10%, 5%, and 1%, respectively.

	Marginal Probability of Becoming an International Firm				
MACRO-LEVEL VARIABLES					
Value Traded Abroad / Total Value Traded	0.510	0.512	0.508	0.416	0.459
	[6.823] ***	[6.679] ***	[6.861] ***	[5.598] ***	[5.940] ***
Law and Order	0.012		0.048	0.048	0.024
	[1.157]		[3.238] ***	[3.432] ***	[1.570]
Log of GDP per Capita		-0.016	-0.045	-0.052	0.014
		[2.123] **	[3.924] ***	[4.751] ***	[1.207]
Log of Inflation	0.545	0.370	0.526	0.518	0.702
	[3.644] ***	[2.684] ***	[3.516] ***	[3.592] ***	[4.329] ***
FIRM-LEVEL VARIABLES					
Size					
Log of Total Assets	0.103	0.106	0.107	0.101	
	[18.774] ***	[18.620] ***	[18.574] ***	[17.782] ***	
Growth					
Sales Growth	-0.001	-0.000	-0.000	-0.000	
	[1.572]	[1.325]	[1.308]	[0.058]	
Performance and Valuation					
Price-to-Book Value	0.023	0.023	0.024	0.024	
	[5.022] ***	[5.119] ***	[5.295] ***	[5.579] ***	
Return on Assets	0.004	0.003	0.002	0.002	
	[2.285] **	[1.513]	[1.418]	[0.984]	
Financial Structure					
Liabilities to Total Assets	-0.002	-0.002	-0.002	-0.002	
	[5.138] ***	[5.455] ***	[5.816] ***	[6.550] ***	
Others					
Foreign Sales to Total Sales				0.002	
				[7.321] ***	
DUMMY VARIABLES					
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	3,446	3,446	3,446	3,446	3,446
Pseudo R-squared	0.247	0.248	0.252	0.27	0.042
Log-Likelihood	-1,220	-1,218	-1,211	-1,182	-1,551

Table 6
Cox Regressions

The table reports Cox estimates of the hazard ratio of becoming an international firm. The dependent variable is a dummy that takes the value one in the year of internationalization, and zero otherwise. After internationalization, observations for that firm are excluded from the estimation. All explanatory variables (e.g. Log of Total Assets) are lagged, with the exception of the dummy variables and the macro variables. Standard errors are adjusted for clustering on companies, i.e., they consider the panel structure of the data. The sample includes observations from 1986 to 2000. *, **, *** mean significant at 10%, 5%, and 1%, respectively. Robust z-statistics in brackets.

	Hazard Ratio				
MACRO-LEVEL VARIABLES					
Value Traded Abroad / Total Value Traded	2.294	1.803	1.767	2.012	1.263
	[2.809] ***	[1.883] *	[1.894] *	[2.301] **	[0.504]
Law and Order		0.930		1.099	0.931
		[1.669] *		[1.567]	[0.892]
Log of GDP per Capita			0.836	0.791	0.779
			[4.347] ***	[4.296] ***	[3.626] ***
Log of Inflation		2.627	1.816	2.018	1.778
		[3.160] ***	[1.625]	[2.055] **	[0.873]
FIRM-LEVEL VARIABLES					
Size					
Log of Total Assets	1.697	1.691	1.719	1.731	1.637
	[17.646] ***	[17.545] ***	[17.800] ***	[17.780] ***	[12.120] ***
Growth					
Sales Growth	1.011	1.011	1.011	1.011	1.010
	[6.970] ***	[7.045] ***	[7.224] ***	[7.303] ***	[4.588] ***
Performance and Valuation					
Price-to-Book Value	1.265	1.270	1.272	1.270	1.188
	[10.797] ***	[11.279] ***	[11.429] ***	[11.265] ***	[5.992] ***
Return on Assets	1.063	1.057	1.050	1.051	1.050
	[6.858] ***	[6.069] ***	[5.316] ***	[5.312] ***	[3.997] ***
Financial Structure					
Liabilities to Total Assets	0.989	0.989	0.989	0.988	0.987
	[4.466] ***	[4.499] ***	[4.767] ***	[4.853] ***	[4.391] ***
Others					
Privatization Dummy	11.371	10.203	8.206	7.857	7.630
	[9.110] ***	[8.334] ***	[6.675] ***	[6.379] ***	[6.603] ***
Foreign Sales / Total Sales					1.020
					[9.551] ***
DUMMY VARIABLES					
Industry Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
Number of Observations	48,113	47,832	47,823	47,823	32,690
Number of Firms	9,303	9,185	9,185	9,185	6,209
Pseudo R-squared	0.070	0.071	0.073	0.073	0.088

Table 7
Cox Regressions by Income Level

The table reports Cox estimates of the hazard ratio of becoming an international firm. The dependent variable is a dummy that takes the value one in the year of internationalization, and zero otherwise. After internationalization, observations for that firm are excluded from the estimation. All explanatory variables (e.g. Log of Total Assets) are lagged, with the exception of the dummy variables. Standard errors are adjusted for clustering on companies, i.e., they consider the panel structure of the data. The sample includes observations from 1986 to 2000. *, **, *** mean significant at 10%, 5%, and 1%, respectively. Robust z-statistics in brackets.

	Hazard Ratio			
FIRM-LEVEL VARIABLES	Developed Countries		Developing Countries	
Size				
Log of Total Assets	1.680	1.579	1.956	1.800
	[14.040] ***	[9.170] ***	[12.376] ***	[8.612] ***
Growth				
Sales Growth	1.011	1.010	1.005	1.004
	[5.784] ***	[3.556] ***	[1.720] *	[1.122]
Performance and Valuation				
Price-to-Book Value	1.262	1.176	1.182	1.114
	[8.544] ***	[4.412] ***	[4.289] ***	[2.000] ***
Return on Assets	1.060	1.062	1.078	1.072
	[4.997] ***	[4.101] ***	[4.872] ***	[3.208] ***
Financial Structure				
Liabilities to Total Assets	0.984	0.986	1.005	0.999
	[5.680] ***	[4.027] ***	[1.095]	[0.108]
Others				
Privatization Dummy	17.284	12.375	7.351	9.127
	[7.137] ***	[5.670] ***	[4.591] ***	[5.268] ***
Foreign Sales / Total Sales		1.018		1.024
		[8.141] ***		[3.851] ***
DUMMY VARIABLES				
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Number of Observations	39,253	27,185	9,423	5,931
Number of Firms	6,950	4,592	2,415	1,654
Pseudo R-squared	0.066	0.083	0.111	0.129

Table 8
Differences of International Firms between Before and After Internationalization

The table reports the medians and the Mann-Whitney U-test of equality of medians between the characteristics of international firms before and after becoming international, covering the whole sample. The year of internationalization is included in the "after" period. The top table reports the statistics for all the countries in our sample, while the bottom tables report the statistics for developed and developing countries, respectively.

All Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Before	After	Before	After	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.70	0.84	3,442	8,351	-5.98	0.00
Growth						
Sales Growth	10.94	7.64	2,619	7,932	6.71	0.00
Performance and Valuation						
Price-to-Book Value	1.74	1.70	2,554	9,071	2.10	0.04
Return on Assets	5.47	5.44	2,567	8,662	0.44	0.66
Financial Structure						
Liabilities to Total Assets	65.17	58.83	3,548	9,675	13.04	0.00
Others						
Foreign Sales / Total Sales	44.37	50.44	1,181	3,669	-5.32	0.00

Developed Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Before	After	Before	After	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.71	0.99	2,473	5,301	-7.43	0.00
Growth						
Sales Growth	9.80	7.49	1,988	5,362	4.37	0.00
Performance and Valuation						
Price-to-Book Value	1.78	1.86	1,825	5,934	-2.75	0.01
Return on Assets	4.89	5.07	1,994	5,748	-1.42	0.16
Financial Structure						
Liabilities to Total Assets	67.63	61.15	2,608	6,293	11.39	0.00
Others						
Foreign Sales / Total Sales	45.63	51.92	1,117	3,378	-5.75	0.00

Developing Countries

Firm-Level Variables	Median		Number of Observations		Mann-Whitney U-test	
	Before	After	Before	After	Z-statistics	P-Value
Size						
Total Assets (US$ Billions)	0.68	0.68	969	3,050	-0.18	0.86
Growth						
Sales Growth	13.69	8.19	631	2,570	5.73	0.00
Performance and Valuation						
Price-to-Book Value	1.68	1.40	729	3,137	5.95	0.00
Return on Assets	7.86	6.42	573	2,914	5.36	0.00
Financial Structure						
Liabilities to Total Assets	59.21	53.56	940	3,382	4.24	0.00
Others						
Foreign Sales / Total Sales	24.12	28.62	64	291	-1.01	0.31

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Table 9
LAV Regressions on Effects of Internationalization

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The table reports estimates of the effects of going abroad. A separate least absolute value regression (LAV) corresponds to each row in the table. The dependent variable (e.g. Log of Total Assets) is regressed on three dummies capturing the effects of internationalization: a before internationalization dummy (which takes the value one in the three years before cross-listing, and zero otherwise), an internationalization dummy (which takes the value one in the year of going abroad, and zero otherwise), and an after internationalization dummy (which takes the value one in the three years after going abroad, and zero otherwise). A constant and additional calendar year dummies and country dummies are included. The table shows the results for all countries in the sample, and for the division between developed and developing countries. * means significant at 10%, ** at 5%, and *** at 1%.

	Before Internationalization (Three-Year Effect)		Internationalization (Same-Year Effect)		After Internationalization (Three-Year Effect)		Number of Observations	Pseudo R-squared
All Countries								
Size								
Log of Total Assets	0.442	[12.740] ***	0.62	[13.081] ***	1.12	[32.419] ***	88,824	0.059
Growth								
Sales Growth	6.885	[15.520] ***	14.75	[23.879] ***	5.09	[12.881] ***	74,401	0.084
Performance and Valuation								
Price-to-Book Value	0.470	[23.974] ***	1.07	[52.868] ***	0.56	[38.989] ***	83,824	0.069
Return on Assets	1.155	[14.545] ***	2.82	[27.971] ***	1.43	[21.892] ***	80,327	0.099
Financial Structure								
Liabilities to Total Assets	3.508	[7.678] ***	-7.656	[12.950] ***	-2.478	[5.820] ***	96,163	0.068
Developed Countries								
Size								
Log of Total Assets	0.165	[4.001] ***	0.25	[4.217] ***	0.97	[20.531] ***	67,097	0.037
Growth								
Sales Growth	7.012	[14.923] ***	13.58	[20.317] ***	4.85	[10.231] ***	57,969	0.102
Performance and Valuation								
Price-to-Book Value	0.480	[12.659] ***	1.17	[30.254] ***	0.75	[24.814] ***	63,663	0.060
Return on Assets	1.180	[11.948] ***	2.71	[21.387] ***	1.85	[20.351] ***	62,033	0.082
Financial Structure								
Liabilities to Total Assets	3.192	[6.019] ***	-8.74	[12.426] ***	-3.73	[6.688] ***	72,444	0.063
Developing Countries								
Size								
Log of Total Assets	1.385	[18.784] ***	1.29	[14.577] ***	1.32	[25.496] ***	21,727	0.131
Growth								
Sales Growth	5.044	[4.684] ***	13.08	[9.550] ***	2.68	[3.913] ***	16,432	0.069
Performance and Valuation								
Price-to-Book Value	0.320	[8.004] ***	0.72	[16.782] ***	0.23	[9.499] ***	20,161	0.102
Return on Assets	0.150	[0.421]	2.77	[6.430] ***	0.46	[2.164] **	18,294	0.074
Financial Structure								
Liabilities to Total Assets	7.164	[6.591] ***	-2.41	[1.883] *	0.65	[0.895]	23,719	0.064

Appendix Table

Series Description and Data Sources

This table shows the description of the data used and their coverage and sources.

Series Names	Description	Source
Internationalization	The initial year in which a firm starts international activities in terms of its equity. The data come from Bank of New York (1989-2000), Euromoney (1980-2000), NASDAQ (1998-2000), NYSE (1998-2000), London Stock Exchange (1997-2000), and Frankfurt Stock Exchange (1999-2000). This information is used to classify firms as domestic or international companies. International companies are the ones that issue a depositary receipt or cross-list in a foreign	Bank of New York, Euromoney, NASDAQ, NYSE, LSE, and FSE
GDP per capita at market prices (current U.S. dollars)	Gross domestic product (GDP) divided by midyear population. The GDP at purchaser prices data is converted from domestic currencies using yearly official exchange rates. For a few countries, where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.	World Bank: World Development Indicators
Inflation, consumer prices (percent per year)	Inflation as measured by the consumer price index. In the regressions, the variable used is log(1+inflation).	World Bank: World Development Indicators
Law and order	Qualitative variable that ranges from 1 to 6, where higher numbers indicate higher "levels" of law and order. Law and order are assessed separately, with each sub-component comprising zero to three points. The law sub-component is an assessment of the strength and impartiality of the legal system, while the order sub-component is an assessment of popular observance of the law. Thus, a country can have a high rating in terms of its judicial system, for example 3, but a low rating, for example 1, if the law is ignored for a political aim, e.g. widespread strikes involving illegal practices. The data cover the period 1984-2000 for all countries.	Political Risk Services: International Country Risk Guide
Value Traded Abroad / Total Value Traded	Value traded abroad corresponds to the value traded in depository receipts, while total value traded corresponds to the total value traded in domestic stock markets plus the total value traded abroad. Trading abroad figures are computed in a firm-level basis by adding all tickers belonging to the same company on a yearly basis, while the domestic value traded is country-level data. When using this variable in the regressions explaining the determinants of going abroad for individual firm, we exclude from the numerator the trading in the specific stock itself in the year of listing and following year(s).	Standard & Poor's (former IFC) Emerging Markets Database and Bank of New York
Industry Dummies	Industry dummies that describe the main industry in which a firms operates. There are 10 dummy variables, following the SIC classification: (1). agriculture, forestry, and fishing; (2). mining; (3). construction; (4). manufacturing; (5). transportation and public utilities; (6). wholesale trade; (7). retail trade; (8). finance, insurance, and real estate; (9). services; and (10). public administration.	s
Foreign Sales to Total Sales	Reported foreign sales as a percentage of total sales. The sample covers the period 1987 - 2000.	Worldscope
Liabilities to Total Assets	Ratio of assets minus equity divided by equity. The sample covers the period 1986 - 2000.	Worldscope

Price to Book Value	Reported price to book value at the end of period (close value). The sample covers the period 1987 - 2000.	Worldscope
Return on Assets (percent per year)	Reported return on assets. The sample covers the period 1987 - 2000.	Worldscope
Sales Growth (percent per year)	Yearly growth of total sales revenues. The sample covers the period 1987 - 2000.	Worldscope
Total Assets (current US$ billions)	Worldscope reported total assets in U.S. dollars for the firm. The sample covers the period 1986 - 2000.	Worldscope